

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number  
**WO 2005/001635 A3**(51) International Patent Classification:  
*G06Q 40/00* (2006.01)

(74) Agents: SCHEINFELD, Robert, C. et al.; Baker Botts LLP, 30 Rockefeller Plaza, New York, NY 10112-4498 (US).

(21) International Application Number:  
PCT/US2004/018658

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 10 June 2004 (10.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/477,187 10 June 2003 (10.06.2003) US  
PCT/US04/17756 4 June 2004 (04.06.2004) US

(71) Applicant (for all designated States except US): MASTERCARD INTERNATIONAL INCORPORATED [US/US]; 2000 Purchase Street, Purchase, NY 10577 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

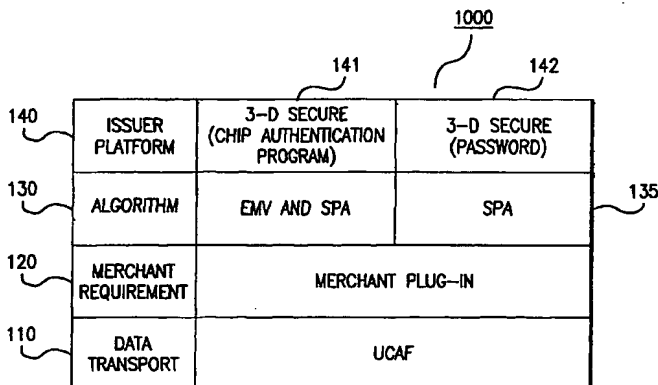
(75) Inventors/Applicants (for US only): KRANZLEY, Arthur, D. [US/US]; 9 Farah Drive, Princeton Junction, NJ 08550 (US). ORFEL, Stephen, W. [US/US]; 12 Manor Lane, Katonah, NY 10536 (US). RUTHERFORD, Bruce, J. [US/US]; 20 Glendale Road, Stamford, CT 06906 (US). WIESMAN, Mark [US/US]; 1801 York Ridge Court, Chesterfield, MO 63017 (US).

Published:

— with international search report

[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR CONDUCTING SECURE PAYMENT TRANSACTIONS USING A FORMATTED DATA STRUCTURE



(57) Abstract: A formatted data structure is provided for conveying the results of ecommerce authentication programs that are used to authenticate a cardholder's on-line transactions. The data structure, which has at most a 20-byte length, is designed to be compatible with 3-D Secure message protocols used in e-commerce. The data structure includes designated fields that include a hash of the merchant's name, identify an authentication service provider, identify the authentication method used, and include a merchant authentication code which ties cardholder information to the transaction. Secure payment algorithms are provided for use by the e-commerce authentication programs to generate authentication results in the desired format. In one secure payment algorithm, a secret key is used to encrypt a concatenation of a cardholder account number with information from designated fields of the data structure. In another secure payment algorithm, a pair of secret keys is used to encrypt a concatenation of the cardholder's account number, card expiration date and service code. In both cases, portions of the encryption results are used to define the merchant authentication code.

WO 2005/001635 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**(88) Date of publication of the international search report:**

12 October 2006

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/18658

## A. CLASSIFICATION OF SUBJECT MATTER

IPC: G06Q 40/00( 2006.01)

USPC: 705/26,27,30,39,40,41,42,44,64,67

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26,27,30,39,40,41,42,44,64,67

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
WEST, DIALOG

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2001/0032154 A1 (SCHUMMER) 18 October 2001 (18.10.2001), entire document.	1-22
A	US 2002/0194138 A1 (DOMINGUEZ et al) 19 December 2002 (19.12.2002), entire document.	1-22
A,P	US 2003/0212642 A1 (WELLER et al) 13 November 2003 (13.11.2003), entire document.	1-22

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

16 July 2006 (16.07.2006)

Date of mailing of the international search report

10 AUG 2006

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Hani Kazimi

Telephone No. (571) 272-6745